

Structure attributes must be viewed using STN Express query preparation.

=> file casreact  
COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION
0.43	0.64

FULL ESTIMATED COST

FILE 'CASREACT' ENTERED AT 16:56:45 ON 28 JUL 2005  
USE IS SUBJECT TO THE TERMS OF YOUR CUSTOMER AGREEMENT  
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications.

FILE CONTENT:1840 - 24 Jul 2005 VOL 143 ISS 4

New CAS Information Use Policies, enter HELP USAGETERMS for details.

```
*****
*
*   CASREACT now has more than 9.2 million reactions
*
*****
```

Some CASREACT records are derived from the ZIC/VINITI database (1974-1991) provided by InfoChem, INPI data prior to 1986, and Biotransformations database compiled under the direction of Professor Dr. Klaus Kieslich.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s ll

SAMPLE SEARCH INITIATED 16:56:48 FILE 'CASREACT'

SCREENING COMPLETE - 0 REACTIONS TO VERIFY FROM 0 DOCUMENTS

100.0% DONE 0 VERIFIED 0 HIT RXNS 0 DOCS  
SEARCH TIME: 00.00.01

FULL FILE PROJECTIONS: ONLINE \*\*COMPLETE\*\*  
BATCH \*\*COMPLETE\*\*

<07/20/2005>

Habte

PROJECTED VERIFICATIONS: 0 TO 0  
PROJECTED ANSWERS: 0 TO 0

L2 0 SEA SSS SAM L1 ( 0 REACTIONS)

=> s l1 sss full

FULL SEARCH INITIATED 16:56:55 FILE 'CASREACT'

SCREENING COMPLETE - 24 REACTIONS TO VERIFY FROM 6 DOCUMENTS

100.0% DONE 24 VERIFIED 0 HIT RXNS 0 DOCS  
SEARCH TIME: 00.00.01

L3 0 SEA SSS FUL L1 ( 0 REACTIONS)

=> log y

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

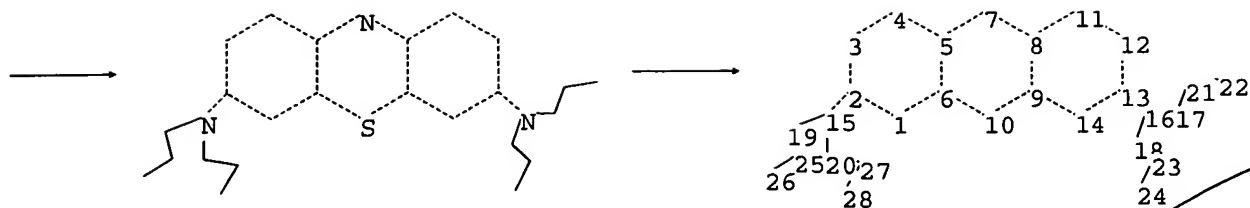
FULL ESTIMATED COST

106.53

107.17

STN INTERNATIONAL LOGOFF AT 16:57:04 ON 28 JUL 2005

①



CasreactH

chain nodes :

15 16 17 18 19 20 21 22 23 24 25 26 27 28

ring nodes :

1 2 3 4 5 6 7 8 9 10 11 12 13 14

chain bonds :

2-15 13-16 15-19 15-20 16-17 16-18 17-21 18-23 19-25 20-27 21-22 23-24  
25-26 27-28

ring bonds :

1-2 1-6 2-3 3-4 4-5 5-6 5-7 6-10 7-8 8-9 8-11 9-10 9-14 11-12 12-13  
13-14

exact/norm bonds :

1-2 1-6 2-3 2-15 3-4 4-5 5-6 5-7 6-10 7-8 8-9 8-11 9-10 9-14 11-12  
12-13 13-14 13-16 15-19 15-20 16-17 16-18

exact bonds :

17-21 18-23 19-25 20-27 21-22 23-24 25-26 27-28

isolated ring systems :

containing 1 :

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom  
11:Atom 12:Atom 13:Atom 14:Atom 15:CLASS 16:CLASS 17:CLASS 18:CLASS  
19:CLASS 20:CLASS 21:CLASS 22:CLASS 23:CLASS 24:CLASS 25:CLASS 26:CLASS  
27:CLASS 28:CLASS

fragments assigned product role:

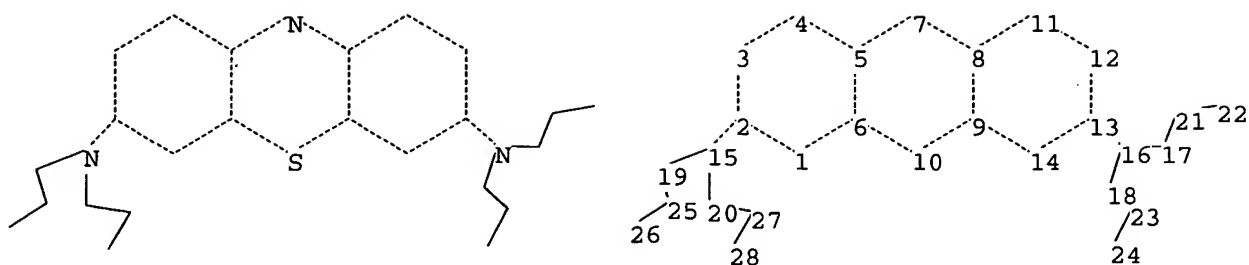
containing 1

L1 STRUCTURE UPLOADED

=&gt; d l1

L1 HAS NO ANSWERS

L1 STR



```

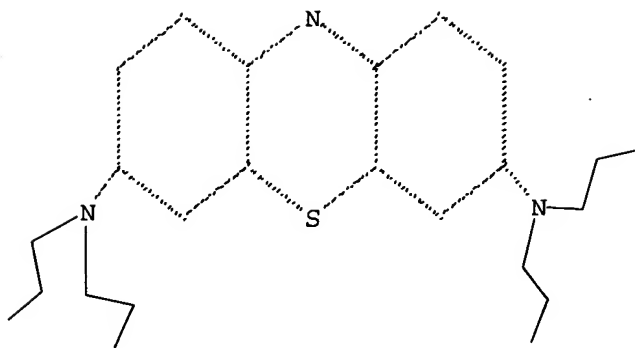
chain nodes :
15 16 17 18 19 20 21 22 23 24 25 26 27 28
ring nodes :
1 2 3 4 5 6 7 8 9 10 11 12 13 14
chain bonds :
2-15 13-16 15-19 15-20 16-17 16-18 17-21 18-23 19-25 20-27 21-22 23-24
25-26 27-28
ring bonds :
1-2 1-6 2-3 3-4 4-5 5-6 5-7 6-10 7-8 8-9 8-11 9-10 9-14 11-12 12-13
13-14
exact/norm bonds :
1-2 1-6 2-3 2-15 3-4 4-5 5-6 5-7 6-10 7-8 8-9 8-11 9-10 9-14 11-12
12-13 13-14 13-16 15-19 15-20 16-17 16-18
exact bonds :
17-21 18-23 19-25 20-27 21-22 23-24 25-26 27-28
isolated ring systems :
containing 1 :

```

```
Match level :
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom
11:Atom 12:Atom 13:Atom 14:Atom 15:CLASS 16:CLASS 17:CLASS 18:CLASS
19:CLASS 20:CLASS 21:CLASS 22:CLASS 23:CLASS 24:CLASS 25:CLASS 26:CLASS
27:CLASS 28:CLASS
fragments assigned product role:
containing 1
```

L1            STRUCTURE   UPLOADED

```
=> d l1
L1 HAS NO ANSWERS
L1                                STR
```



Structure attributes must be viewed using STN Express query preparation.

=> s l1

SAMPLE SEARCH INITIATED 17:07:09 FILE 'REGISTRY'  
 SAMPLE SCREEN SEARCH COMPLETED - 25 TO ITERATE

100.0% PROCESSED 25 ITERATIONS 4 ANSWERS  
 SEARCH TIME: 00.00.01

FULL FILE PROJECTIONS: ONLINE \*\*COMPLETE\*\*  
 BATCH \*\*COMPLETE\*\*  
 PROJECTED ITERATIONS: 200 TO 800  
 PROJECTED ANSWERS: 4 TO 200

L2 4 SEA SSS SAM L1

=> s l1 sss full

FULL SEARCH INITIATED 17:07:14 FILE 'REGISTRY'  
 FULL SCREEN SEARCH COMPLETED - 454 TO ITERATE

100.0% PROCESSED 454 ITERATIONS 40 ANSWERS  
 SEARCH TIME: 00.00.01

L3 40 SEA SSS FUL L1

=> file caplus

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	161.33	161.54

FILE 'CAPLUS' ENTERED AT 17:07:18 ON 28 JUL 2005  
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
 COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching

databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 28 Jul 2005 VOL 143 ISS 5

FILE LAST UPDATED: 27 Jul 2005 (20050727/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l3

L4 19 L3

=> d ibib abs hitstr tot

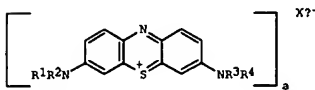
L4 ANSWER 1 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2005:623436 CAPLUS  
 DOCUMENT NUMBER: 143:59990  
 TITLE: Preparation of phenothiazinium salts as antimicrobials for use in photodynamic therapy (PDT).  
 INVENTOR(S): Brown, Stanley Beames; O'Grady, Cassandra Claire; Griffiths, John; Mallish, Kirste Joanne; Tunstall, Richard George; Roberts, David John Howard; Vernon, David Ian  
 PATENT ASSIGNEE(S): Photopharmica Limited, UK  
 SOURCE: PCT Int. Appl., 69 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005054217	A1	20050616	WO 2004-GB4918	20041122

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MY, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SV, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GN, GQ, GW, ML, MR, NE, SN, TD, TG

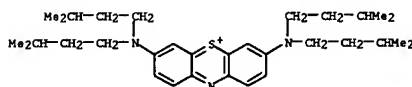
PRIORITY APPL. INFO.: GB 2003-27672 A 20031128  
 GB 2003-29809 A 20031223

GI

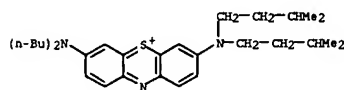


AB Phenothiazinium compds. for use as antimicrobials [I: R1-R4 = (substituted) linear, branched or cyclic hydrocarbyl; or R1R2N or R3R4N = (substituted) 5-7 membered ring; Xa = counteranion; a = 1, 2, 3], were prepared Thus, reaction of 3-dipropylaminophenothiazin-5-ium iodide reacted with Me2NH.HCl to give 3-dimethylamino-7-dipropylaminophenothiazin-5-ium iodide. The latter showed LD50 = 0.22 µM in a screen for PDT efficiency in RIF-1 murine fibrosarcoma cells.  
 IT 814917-36-7P 814917-37-8P 814917-38-8P  
 854278-27-6P 854278-28-7P 854278-32-3P  
 RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES

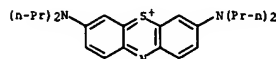
L4 ANSWER 1 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)



RN 854278-32-3 CAPLUS  
 CN Phenothiazin-5-ium, 3-[bis(3-methylbutyl)amino]-7-(dibutylamino)- (9CI) (CA INDEX NAME)

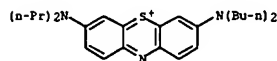


IT 439119-95-6P 439119-96-7P 439119-97-8P  
 439119-98-9P 813463-03-5P 813463-04-6P  
 813463-05-7P 854278-13-0P 854278-14-1P  
 854278-15-2P 854278-16-3P  
 RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)  
 (preparation of phenothiazinium salts as antimicrobials for use in photodynamic therapy)  
 RN 439119-95-6 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dipropylamino)-, iodide (9CI) (CA INDEX NAME)

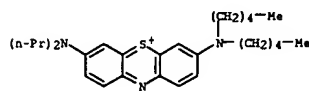
• I<sup>-</sup>

RN 439119-96-7 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dibutylamino)-, iodide (9CI) (CA INDEX NAME)

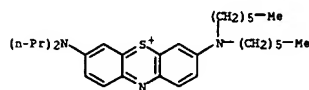
L4 ANSWER 1 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)  
 (Uses)  
 (claimed compd.; prepn. of phenothiazinium salts as antimicrobials for use in photodynamic therapy)  
 RN 814917-36-7 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dibutylamino)-7-(dipropylamino)- (9CI) (CA INDEX NAME)



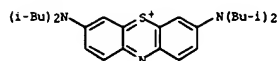
RN 814917-37-8 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dipentylamino)-7-(dipropylamino)- (9CI) (CA INDEX NAME)



RN 814917-38-9 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dihexylamino)-7-(dipropylamino)- (9CI) (CA INDEX NAME)

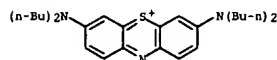


RN 854278-27-6 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis[bis(2-methylpropyl)amino]- (9CI) (CA INDEX NAME)

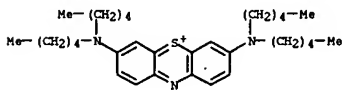


RN 854278-28-7 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis[bis(3-methylbutyl)amino]- (9CI) (CA INDEX NAME)

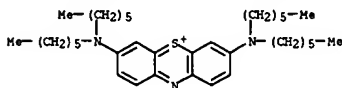
L4 ANSWER 1 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)

• I<sup>-</sup>

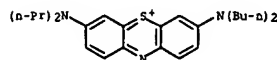
RN 439119-97-8 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dipentylamino)-, iodide (9CI) (CA INDEX NAME)

• I<sup>-</sup>

RN 439119-98-9 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dihexylamino)-, iodide (9CI) (CA INDEX NAME)

• I<sup>-</sup>

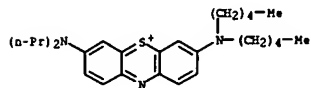
RN 813463-03-5 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dibutylamino)-7-(dipropylamino)-, iodide (9CI) (CA INDEX NAME)

• I<sup>-</sup>

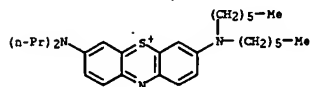
Habte

L4 ANSWER 1 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)

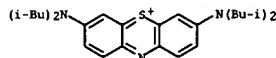
RN 813463-04-6 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dipentylamino)-7-(dipropylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

RN 813463-05-7 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dihexylamino)-7-(dipropylamino)-, iodide (9CI) (CA INDEX NAME)

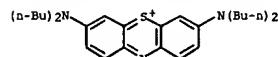
● I<sup>-</sup>

RN 854278-13-0 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis[bis(2-methylpropyl)amino]-, iodide (9CI) (CA INDEX NAME)

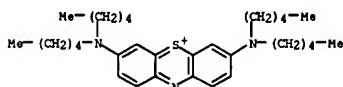
● I<sup>-</sup>

RN 854278-14-1 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis[bis(3-methylbutyl)amino]-, iodide (9CI) (CA INDEX NAME)

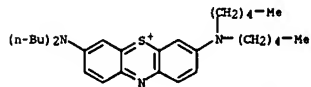
L4 ANSWER 1 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)



RN 761394-42-7 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dipentylamino)- (9CI) (CA INDEX NAME)



RN 854278-50-5 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dibutylamino)-7-(dipentylamino)- (9CI) (CA INDEX NAME)

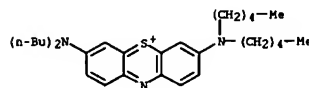


REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

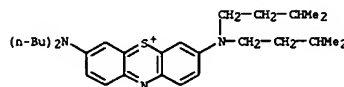
L4 ANSWER 1 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)

● I<sup>-</sup>

RN 854278-15-2 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dibutylamino)-7-(dipentylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

RN 854278-16-3 CAPLUS  
 CN Phenothiazin-5-ium, 3-[bis(3-methylbutyl)amino]-7-(dibutylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

IT 748763-10-2 761394-42-7 854278-50-5  
 RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (preparation of phenothiazinium salts as antimicrobials for use in photodynamic therapy)  
 RN 748763-10-2 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dibutylamino)- (9CI) (CA INDEX NAME)

L4 ANSWER 2 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:431459 CAPLUS  
 DOCUMENT NUMBER: 142:472669  
 TITLE: Processes for preparing novel methylene blue derivative as laser reactive dyes for optical disk copy protection system  
 INVENTOR(S): Vig, Rakesh; Gerger, Scott; Selinfreund, Richard H.; Miller, Peter; Cunningham, Mike; Phillips, Chris; Cook, Ewell; Saglimbeni, Anthony A.  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 19 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

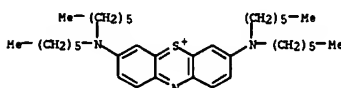
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005107607	A1	20050519	US 2003-715226	20031117
WO 2005049561	A2	20050602	WO 2004-053757	20041110
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MY, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRIORITY APPL. INFO.: US 2003-715226 A 20031117

AB Disclosed is a methods for the preparation of [7-(dipropylamino)pheno-thiazin-3-ylidene]dipropylamine, which is suitable for a laser reactive dyes for optical disk copy protection system.

IT 699534-70-8P 747403-52-7P  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (processes for preparing novel methylene blue derivative as laser reactive dyes for optical disk copy protection system)

RN 699534-70-8 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dihexylamino)- (9CI) (CA INDEX NAME)

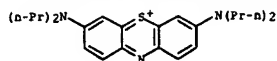


RN 747403-52-7 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dipropylamino)- (9CI) (CA INDEX NAME)



own work

L4 ANSWER 2 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)



L4 ANSWER 3 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:63143 CAPLUS  
 DOCUMENT NUMBER: 141:182043  
 TITLE: Bis-propyl amine analog and composition  
 INVENTOR(S): Vig, Rakesh; Gerger, Scott; Selinfreund, Richard H.; Miller, Peter; Cunningham, Mike; Phillips, Chris; Cook, Ewell; Saglimbeni, Anthony A.  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 17 pp., Cont.-in-part of U.S. Pat. Appl. 2004 110,088.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 3  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004152017	A1	20040805	US 2003-715244	20031117
US 2004004922	A1	20040108	US 2003-418898	20030417
US 2004110088	A1	20040610	US 2003-641784	20030815
PRIORITY APPLN. INFO.:				
			US 2002-389223P	P 20020617
			US 2002-390647P	P 20020621
			US 2002-391773P	P 20020625
			US 2002-391857P	P 20020626
			US 2002-393397P	P 20020702
			US 2003-418898	A2 20030417
			US 2003-641784	A2 20030815
			US 2002-413934P	P 20020926

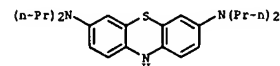
OTHER SOURCE(S): MARPAT 141:182043

AB The present invention relates to a copy-protected optical medium utilizing a composition comprising a transient optical state change security materials capable of changing optical state when exposed to a wavelength of about 630-660 nm and an electron transfer agent.

IT 733045-94-8P 733045-95-9P  
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (Bis-Pr amine analog and composition for optical disk)

RN 733045-94-8 CAPLUS

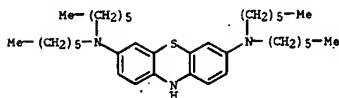
CN 10H-Phenothiazine-3,7-diamine, N,N,N',N'-tetrapropyl- (9CI) (CA INDEX NAME)



RN 733045-95-9 CAPLUS

CN 10H-Phenothiazine-3,7-diamine, N,N,N',N'-tetrahexyl- (9CI) (CA INDEX NAME)

L4 ANSWER 3 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)



L4 ANSWER 4 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:538494 CAPLUS  
 DOCUMENT NUMBER: 142:70826  
 TITLE: A comparative analysis of phenothiazinium salts for the photosensitization of murine fibrosarcoma (RIF-1) cells in vitro  
 AUTHOR(S): Walker, Ian; Gorman, Stephen A.; Cox, Russell D.; Vernon, David I.; Griffiths, John; Brown, Stanley B.  
 CORPORATE SOURCE: Centre for Photobiology and Photodynamic Therapy, School of Biochemistry and Molecular Biology, Leeds, LS2 9JT, UK  
 SOURCE: Photochemical & Photobiological Sciences (2004), 3(7), 653-659  
 CODEN: PPSHCB; ISSN: 1474-905X  
 PUBLISHER: Royal Society of Chemistry  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Photodynamic therapy (PDT) is a treatment combining a photosensitizer, mol. oxygen and visible light of characteristic wavelength to produce cytotoxic reactive oxygen species (ROS). Within our center, a series of phenothiazinium salts were synthesized and initial characterization studies performed to determine any potential use for PDT. All photosensitizers

within the series were shown to have useful spectral properties for PDT, with absorbance  $\lambda_{max}$  above 667 nm. The Log P values of the compds. were shown to range from -0.9 to > +2.0. Furthermore, Log P values were shown to be important in determining the site of subcellular localization

and as such the site of photooxidative damage. Derivs. with a Log P value of greater than +1.0 were shown to initially localize to the lysosomes then relocate throughout the cytoplasm following illumination, whereas compds. with intermediate Log P values (-0.7 to +1.0) all remained lysosomal. Only methylene blue (Log P -0.9) was shown to redistribute to the nucleus upon illumination. Following treatment of RIF-1 cells with each phenothiazinium salt for 1 h and subsequent exposure to 665 nm laser light at a fluence rate of 10 mW cm<sup>-2</sup> (18 J cm<sup>-2</sup>), it was determined that

the most potent photosensitizer was 260-fold more potent than methylene blue. Furthermore, the PDT efficacy of the photosensitizers was shown to be related to the level of mitochondrial damage induced directly following illumination.

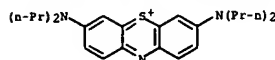
IT 439119-95-6 813463-03-5 813463-04-6

RL: DMA (Drug mechanism of action); PAC (Pharmacological activity); PKT (Pharmacokinetics); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (comparative anal. of phenothiazinium salts for photosensitization of fibrosarcoma)

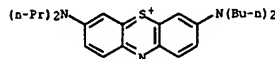
RN 439119-95-6 CAPLUS

CN Phenothiazin-5-ium, 3,7-bis(dipropylamino)-, iodide (9CI) (CA INDEX NAME)

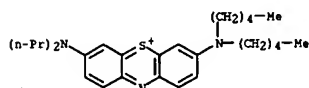
L4 ANSWER 4 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)

● I<sup>-</sup>

RN 813463-03-5 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dibutylamino)-7-(dipropylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

RN 813463-04-6 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dipentylamino)-7-(dipropylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

RN 813463-05-7 CAPLUS  
 CN Phenothiazin-5-ium, 3-(dihexylamino)-7-(dipropylamino)-, iodide (9CI) (CA INDEX NAME)

L4 ANSWER 5 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:927420 CAPLUS  
 DOCUMENT NUMBER: 138:16590  
 TITLE: Biologically active methylene blue derivatives  
 INVENTOR(S): Brown, Stanley Beames; O'Grady, Cassandra Claire; Griffiths, John; Mellish, Kirste Joanne; Tunstall, Richard George; Roberts, David John Howard; Vernon, David Ian  
 PATENT ASSIGNER(S): Photopharmacia Limited, UK  
 SOURCE: PCT Int. Appl., 59 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

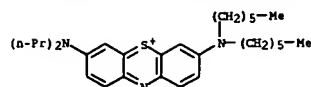
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002096896	A1	20021205	WO 2002-GB2278	20020530
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MY, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZH, ZW, AM, AZ, BY, BG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2448303	AA	20021205	CA 2002-2448303	20020530
NZ 529682	A	20031219	NZ 2002-529682	20020530
EP 1392666	A1	20040303	EP 2002-726300	20020530
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
BR 2002009783	A	20040420	BR 2002-9783	20020530
CN 1551872	A	20041201	CN 2002-812696	20020530
JP 2005500271	T2	20050106	JP 2003-500075	20020530
US 2004147508	A1	20040729	US 2003-723420	20031126
ZA 2003009215	A	20050311	ZA 2003-9215	20031126
PRIORITY APPL. INFO.:				
OTHER SOURCE(S): MARPAT 138:16590				

AB This invention relates to biol. active photosensitizers which are strongly photocytotoxic and have application in the areas of photodynamic therapy, as well as for the diagnosis and detection of medical conditions, in the treatment of microbial infections, in photodisinfection and photosterilization. The examples provided are of methylene blue and its Et, Pr, Bu, pentyl and hexyl analogs. The latter compds. have antimicrobial and antitumor activity. Methylene blue analogs are suitable for inclusion in polymers such as cellulose triacetate, for adsorption on polymer surfaces, and for covalent attachment to polymer substrates. The analogs and derivs. are also suitable for use on medical devices and in food processing.

IT 439119-95-6 439119-96-7 439119-97-8  
 439119-98-9

RL: ADV (Adverse effect, including toxicity); PAC (Pharmacological activity); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (methylene blue derivs. and analogs as photosensitizers in photodynamic

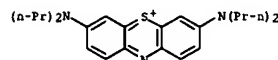
L4 ANSWER 4 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)

● I<sup>-</sup>

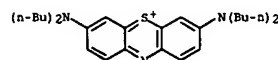
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 5 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)

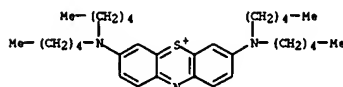
therapy and photodisinfection)  
 RN 439119-95-6 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dipropylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

RN 439119-96-7 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dibutylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

RN 439119-97-8 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dipentylamino)-, iodide (9CI) (CA INDEX NAME)

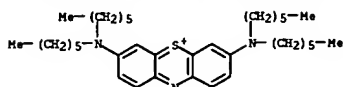
● I<sup>-</sup>

RN 439119-98-9 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dihexylamino)-, iodide (9CI) (CA INDEX NAME)

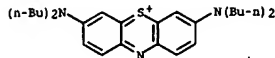
&lt;07/28/2005&gt;

Habte

L4 ANSWER 5 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)

● I<sup>-</sup>

IT 439119-96-7DP, reaction products with cellulose triacetate  
 RL: SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)  
 (methylene blue derivs. and analogs as photosensitizers: inclusion in, adsorption to and attachment to polymers)  
 RN 439119-96-7 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dibutylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 6 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

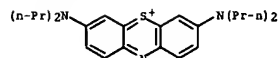
ACCESSION NUMBER: 2002:322672 CAPLUS  
 DOCUMENT NUMBER: 137:59603  
 TITLE: In vitro photodynamic activity of a series of methylene blue analogues  
 AUTHOR(S): Mellish, Kirste J.; Cox, Russell D.; Vernon, David I.; Griffiths, John; Brown, Stanley B.  
 CORPORATE SOURCE: School of Biochemistry and Molecular Biology, Centre for Photobiology and Photodynamic Therapy, University of Leeds, Leeds, LS2 9JT, UK  
 SOURCE: Photochemistry and Photobiology (2002), 75(4), 392-397  
 CODEN: PHCBAP; ISSN: 0031-8655  
 PUBLISHER: American Society for Photobiology  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB We have synthesized a series of sym. phenothiazines in which the Me groups of methylene blue have been substituted by longer alkyl chains. Intrinsic photosensitizing ability was not altered by increasing the chain length. However, in vitro phototoxicity after 2 h incubation of RIF-1 murine fibrosarcoma cells followed the order Pr > n-pentyl > Bu > n-hexyl > Et > Me, with Et and Pr analogs being 14- and 130-fold more phototoxic than methylene blue, resp. All analogs also had an improved ratio of phototoxicity: dark toxicity (4:1 to 27:1) compared with methylene blue (3:1). Phototoxicity did not correlate with cellular phenothiazine levels, suggesting that the site of subcellular localization may be more important. After 2 h incubation of RIF-1 cells with the phototoxicity LD50 concentration, methylene blue and all analogs were observed to be localized in

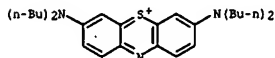
the lysosomes by fluorescence microscopy. On exposure to light, methylene blue relocated to the nucleus, the Et analog did not relocate, whereas the more phototoxic n-Pr-n-hexyl analogs relocated to the mitochondria. Relocalization to the mitochondria was associated with an octanol: buffer partition coefficient  $\geq 1$ . Therefore, the longer-chain analogs of methylene blue show significantly improved phototoxicity in vitro and, in addition, are expected to avoid the problems of mutagenicity associated with the nuclear localization of methylene blue.

IT 439119-95-6P 439119-96-7P 439119-97-8P 439119-98-9P  
 RL: PAC (Pharmacological activity); PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)  
 (in vitro photodynamic activity of methylene blue analogs)  
 RN 439119-95-6 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dipropylamino)-, iodide (9CI) (CA INDEX NAME)

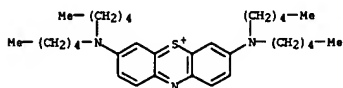
L4 ANSWER 6 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)

● I<sup>-</sup>

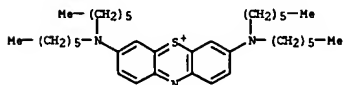
RN 439119-96-7 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dibutylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

RN 439119-97-8 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dipentylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

RN 439119-98-9 CAPLUS  
 CN Phenothiazin-5-ium, 3,7-bis(dihexylamino)-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

&lt;07/28/2005&gt;

L4 ANSWER 6 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)  
 REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

Habte

L4 ANSWER 7 OF 19 CAPLUS COPYRIGHT 2005 ACS ON STN

ACCESSION NUMBER:

1997:727251 CAPLUS

DOCUMENT NUMBER:

127:293885

TITLE:

Electrochemically Assisted Sol-Gel Process for the Synthesis of Polysiloxane Films Incorporating Phenothiazine Dyes Analogous to Methylene Blue. Structure and Ion-Transport Properties of the Films via Spectroscopic and Electrochemical Characterization

AUTHOR(S):

Leventis, Nicholas; Chen, Hugu

CORPORATE SOURCE:

Department of Chemistry, University of Missouri, Rolla

SOURCE:

Chemistry of Materials (1997), 9(11), 2621-2631

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER:

American Chemical Society

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB A sol-gel process is used for electrochem. manipulation of the solubility of trimethoxysilyl group-modified methylene blue on an electrode in an aqueous environment. The process lasts for 2-3 h and results in electrode derivatization with a silsesquioxane network incorporating methylene blue. Crosslinking is completed by drying the films at room temperature for 2 days.

The concentration of the phenothiazine moieties in the resulting zero films was approx. 3.9 M and the film d. approx. 2.6 g/cm<sup>3</sup>. The average distance between phenothiazine moieties is <5 Å allowing interactions between their π-systems. The narrow pores between monomer units restrict movement of hydrated charge-compensating ions, so that the redox switching of the films depends upon the chemical identity of both the cation and anion of the supporting electrolyte. The films retain the electrochromic and electrocatalytic properties of the parent dye; for example, gold electrodes derivatized with the film mediate reduction of cytochrome c at potentials close to its standard electrochem. potential.

IT 172703-24-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

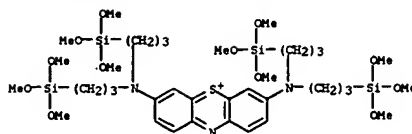
(monomer; structure and charge transport properties of silsesquioxane films prepared via electropolymerization of trimethoxysilyl derivative of methylene blue)

RN 172703-24-1 CAPLUS

CN Phenothiazin-5-ium, 3,7-bis[bis[3-(trimethoxysilyl)propyl]amino]-, bromide (9CI) (CA INDEX NAME)

L4 ANSWER 7 OF 19 CAPLUS COPYRIGHT 2005 ACS ON STN

(Continued)

● Br<sup>-</sup>

IT 172703-25-2P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (structure and charge transport properties of silsesquioxane films prepared via electropolymerization of trimethoxysilyl derivative of methylene blue)

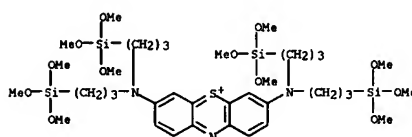
RN 172703-25-2 CAPLUS

CN Phenothiazin-5-ium, 3,7-bis[bis[3-(trimethoxysilyl)propyl]amino]-, bromide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 172703-24-1

CMF C36 H66 N3 O12 S 514 . Br

● Br<sup>-</sup>

REFERENCE COUNT:

65

THERE ARE 65 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 8 OF 19 CAPLUS COPYRIGHT 2005 ACS ON STN

ACCESSION NUMBER:

1996:523548 CAPLUS

DOCUMENT NUMBER:

125:154482

TITLE:

Thermal recording material

INVENTOR(S):

Koro, Takaaki; Kondo, Naoko; Dano, Nobuhisa; Tsuchida, Tetsuo

PATENT ASSIGNEE(S):

Shinjo, Seishi Kk, Japan

SOURCE:

Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JXOXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT:

1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08142522	A2	19960604	JP 1995-241624	19950920
PRIORITY APPL. INFO.			JP 1994-226558	A1 19940921
OTHER SOURCE(S):		MARPAT 125:154482		

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB In the material, comprising a support and a recording layer containing a basic-leuco dye and a color developer, the dye comprises a black-coloring fluoran derivative and 5-100 weight parts (based on the fluoran derivative) of a

phenothiazine derivative I (R1-4 = Cl-4 alkyl; R5 = H, halo, Cl-4 alkyl, Cl-4 alkoxy), and the developer comprises a salicylic acid (Zn salt) of II or III (X = H, Cl-4 alkyl, Cl-4 alkoxy, halo; Q = ether- or sulfonyl linkage; A, R = Cl-6 alkylene). The phenothiazine derivative may be IV. The material

shows good resistances for high temperature, moisture, or light, and provides images with less fogs.

IT 175220-40-3, 3,7-Bis[di-(n-butylamino)-10-(4-chlorobenzoyl)]phenothiazine

RL: TEM (Technical or engineered material use); USES (Uses)

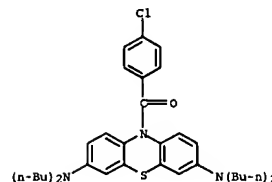
(dye; thermal recording material with fluoran and phenothiazine dye)

RN 175220-40-3 CAPLUS

CN 10H-Phenothiazine-3,7-diamine, N,N,N',N'-tetrabutyl-10-(4-chlorobenzoyl)- (9CI) (CA INDEX NAME)

L4 ANSWER 8 OF 19 CAPLUS COPYRIGHT 2005 ACS ON STN

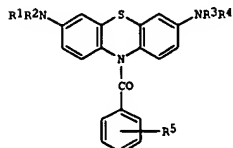
(Continued)



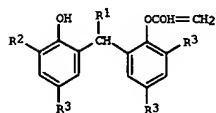
L4 ANSWER 9 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1996:49239 CAPLUS  
 DOCUMENT NUMBER: 125:100252  
 TITLE: Thermal recording material with improved lightfastness  
 INVENTOR(S): Inada, Satoko; Watanabe, Kazuo  
 PATENT ASSIGNEE(S): Shinogi Seishi KK, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JXKXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08099466	A2	19960416	JP 1994-237023	19940930
PRIORITY APPLN. INFO.:			JP 1994-237023	19940930
OTHER SOURCE(S):		MARPAT 125:100252		

GI



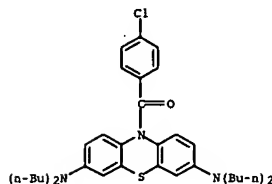
I



II

AB The title material comprises a support coated with a heat-sensitive layer containing a black-coloring leuco dye, a color developer, a phenothiazine derivative I (R1-4 = Cl-4 alkyl; R5 = H, halo, Cl-4 alkyl, Cl-4 alkoxy), and an antioxidant II (R1 = H, Me; R2 = tert-Bu, tert-amyl; R3 = Me, tert-amyl). A thermal recording paper containing 3-di(n-butyl)amino-6-methyl-7-anilino-4,4'-isopropylidenediphenol, I (R1-4 = Me; R4 = H), and II (R1 = H; R2 = tert-Bu; R3 = Me) gave high-d. and low-fog images with good lightfastness.

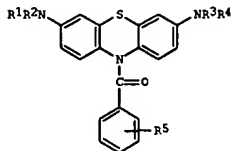
L4 ANSWER 9 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)  
 IT 175220-40-3, 3,7-Bis(di-n-butylamino)-10-(4-chlorobenzoyl)phenothiazine  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (thermal recording material with improved lightfastness containing)  
 RN 175220-40-3 CAPLUS  
 CN 10H-Phenothiazine-3,7-diamine, N,N,N',N'-tetrabutyl-10-(4-chlorobenzoyl)-(9CI) (CA INDEX NAME)



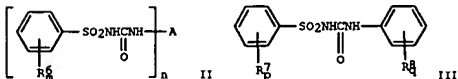
L4 ANSWER 10 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1996:431129 CAPLUS  
 DOCUMENT NUMBER: 125:71974  
 TITLE: Thermal recording material containing phenothiazine derivative  
 INVENTOR(S): Kondo, Naoko; Koro, Takaaki; Dano, Nobuhisa; Tsuchida, Tetsuo  
 PATENT ASSIGNEE(S): Shinogi Seishi KK, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JXKXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08090924	A2	19960409	JP 1994-235141	19940929
PRIORITY APPLN. INFO.:			JP 1994-235141	19940929
OTHER SOURCE(S):		MARPAT 125:71974		

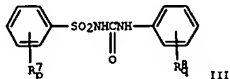
GI



I



II



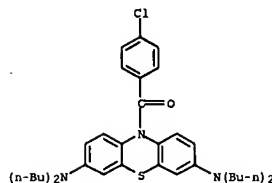
III

AB The material consists of a support coated with a recording layer containing (A) 100 weight % black fluoran derivative basic dye, (B) 5-100 weight % phenothiazine derivative I (R1-4 = Cl-4 alkyl; R5 = H, halo, Cl-4 alkyl, Cl-4 alkoxy), and (C) N-arylsulfonylurea compound II (R6 = Cl-4 alkyl, Cl-4 alkoxy, benzyl, halo, OH; n = 2-4; m = 0-5) or III (R7-8 = Cl-4 alkyl, Cl-4 alkoxy, benzyl, halo, OH; p, q = 0-5) as a developer. The material shows good optical character reading (OCR) properties.

IT 175220-40-3  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (thermal recording material containing fluoran derivative, phenothiazine derivative, and arylsulfonylurea developer)  
 RN 175220-40-3 CAPLUS  
 CN 10H-Phenothiazine-3,7-diamine, N,N,N',N'-tetrabutyl-10-(4-chlorobenzoyl)-

<07/28/2005>

L4 ANSWER 10 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)  
 (9CI) (CA INDEX NAME)



Habte

L4 ANSWER 11 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER:

1996:214840 CAPLUS

DOCUMENT NUMBER:

124:263649

TITLE:

Heat-sensitive recording sheets

INVENTOR(S):

Tsuchida, Tetsuo; Kondo, Naoko; Dano, Nobuhisa

PATENT ASSIGNER(S):

New Oji Paper Co., Ltd., Japan

SOURCE:

Ger. Offen., 10 pp.

CODEN: GWXKX

DOCUMENT TYPE:

Patent

LANGUAGE:

German

FAMILY ACC. NUM. COUNT:

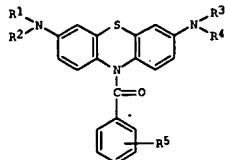
1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19527029	A1	19960201	DE 1995-19527029	19950724
US 5565402	A	19961015	US 1995-501465	19950712
JP 08090930	A2	19960409	JP 1995-189558	19950725
PRIORITY APPL. INFO.:			JP 1994-173045	A 19940726

OTHER SOURCE(S): MARPAT 124:263649

GI



AB The title sheets, giving good optical readability at 650-700 nm, are coated with colorless or lightly colored mixts. of basic black fluoran derivative dyes, the phenothiazines I (R1-4 = Cl-4 alkyl, R5 = H, halogen, alkyl, alkoxy) and the sulfones (OH)m(R6)pC6H5-n-pSO2C6H5-n-q(R7)q(OH)n (R6-7 = alkyl, alkenyl, alkoxy, FACH2O, halogen; m = 0-2; n = 1-3; p, q = 0-2). A paper sheet was coated with 4 g/m2 (dry basis) thickened, filled mixture of 25% aqueous 7-anilino-3-(dibutylamino)-6-methylfluoran 32, 25% aqueous

10-benzoyl-3,7-bis(dimethylamino)phenothiazine 80, 25% aqueous bis(3-allyl-4-hydroxyphenyl) sulfone 80, and 30% aqueous 1,2-bis(3-methylphenoxy)ethane 80 parts and dried to give a sheet giving prints with PCS value (670 nm) 0.89, 0.85, and 0.93; and background haze 0.06, 0.07, and 0.08; for an unaged sheet, a sheet subjected to moist heat, and a sheet exposed to light, resp.

IT 175220-40-3  
RL: TEM (Technical or engineered material use); USES (Uses)  
(heat-sensitive recording sheets)

RN 175220-40-3 CAPLUS

L4 ANSWER 12 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER:

1996:1132 CAPLUS

DOCUMENT NUMBER:

124:100629

TITLE:

Synthesis of methylene blue modified with trimethoxysilyl groups, and electrode surface derivatization

AUTHOR(S):

Leventis, Nicholas; Chen, Muguo

CORPORATE SOURCE:

Department Chemistry, University Missouri - Rolla,

Rolla, MO, 65401, USA

SOURCE:

Polymeric Materials Science and Engineering (1995),

73, 406-7

CODEN: PMSEDG; ISSN: 0743-0515

American Chemical Society

PUBLISHER:

Journal

DOCUMENT TYPE:

English

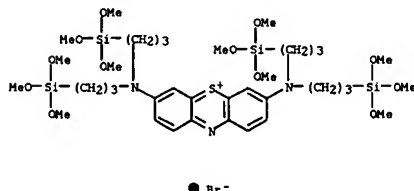
LANGUAGE:

AB The synthesis, characterization, and derivatization of electrode surfaces with 3,7-bis[di(trimethoxysilyl)-3-propyl]amino]phenothiazine-5-ium bromide, [MB(SiOMe)], a polymerizable analog of MB are presented. A new method for the immobilization of methylene blue is demonstrated. The resulting films retain all the electrochem. and spectroscopic properties of the monomer. Apart from its electrochem. applications, the new monomer, MB(SiOMe), can comprise a very stable dye stuff as it can covalent bond to any surface that contains hydroxyl groups.

IT 172703-24-1  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(derivatization of electrode surfaces with)

RN 172703-24-1 CAPLUS

CN Phenothiazine-5-ium, 3,7-bis[bis[3-(trimethoxysilyl)propyl]amino]-, bromide (9CI) (CA INDEX NAME)



IT 172703-25-2  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(mediated reduction of cytochrome c with)

RN 172703-25-2 CAPLUS

CN Phenothiazine-5-ium, 3,7-bis[bis[3-(trimethoxysilyl)propyl]amino]-, bromide, homopolymer (9CI) (CA INDEX NAME)

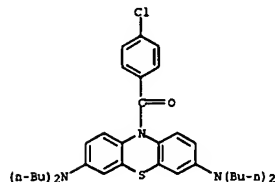
CH 1

CRN 172703-24-1

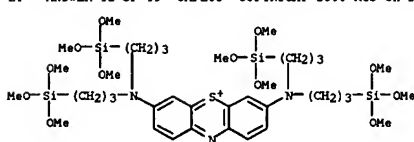
CMF C36 H66 N3 O12 S Si4 . Br

L4 ANSWER 11 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)

CN 10H-Phenothiazine-3,7-diamine, N,N,N',N'-tetrabutyl-10-(4-chlorobenzoyl)- (9CI) (CA INDEX NAME)



L4 ANSWER 12 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)



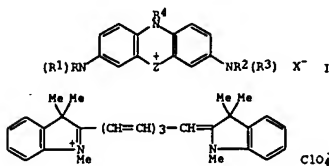
● Br<sup>-</sup>

L4 ANSWER 13 OF 19 CAPLUS COPYRIGHT 2005 ACS ON STN

ACCESSION NUMBER: 1990:66869 CAPLUS  
 DOCUMENT NUMBER: 112:66869  
 TITLE: Optical recording medium using polymethine dyes  
 INVENTOR(S): Sato, Tsutomu; Ichinose, Keiko  
 PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokyo Koho, 5 pp.  
 CODEN: JXKXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01166985	A2	19890630	JP 1987-325896	19871223
PRIORITY APPL. INFO.:			JP 1987-325896	19871223

GI



AB Optical recording medium is composed of a substrate bearing, directly or via an undercoating, a recording layer and a protective overcoating (if necessary), the former containing a polymethine type dye as a main component and a dye I (R, R1-3 = C1-8 alkyl; R4 = H, C1-6 alkyl; Z = O, S, Se; X- = acid anion). The medium has high stabilities against light and heat so as to minimize its optical degradation during the process of rerecording.

Thus, a poly(Me methacrylate) disk (thickness 1.2 mm, diameter 130 mm) was coated with an acrylic photoresist on which a 900 Å deep leading groove was patterned at 1.6 µm pitch to form a substrate for a recording medium. A cyanine dye II and a dye I (R, R1-3 = Me, R4 = H, Z = S, A = AcO-) with a weight ratio of 85:15 were dissolved together in (CH2Cl)2 and spin-coated on the substrate to form a 700 Å thick recording layer. Recording and reading out of information were carried out by using a 790 nm semiconductor laser at a recording frequency of 0.5 MHz and a scanning rate of 1.5 m/s to attain a carrier to noise ratio of 49 dB. A forced examination for light fastness by means of exposure of the medium to 54,000

IX W-light for 20 h resulted in an improved reflectance decrease of the medium compared with a control without containing the I dye.

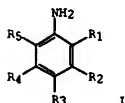
IT 124773-95-1 124794-84-9

L4 ANSWER 14 OF 19 CAPLUS COPYRIGHT 2005 ACS ON STN

ACCESSION NUMBER: 1990:32646 CAPLUS  
 DOCUMENT NUMBER: 112:32646  
 TITLE: Substrates and chromogenic reagents for enzyme assays  
 INVENTOR(S): Miike, Akira; Tatano, Toshio  
 PATENT ASSIGNEE(S): Kyowa Medex Co., Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 12 pp.  
 CODEN: EFXKXW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 317243	A2	19890524	EP 1988-310736	19881114
EP 317243	A3	19901017		
EP 317243	B1	19940831		
R: DE, FR, GB, IT				
JP 01128797	A2	19890522	JP 1987-286559	19871113
JP 07114709	B4	19951213		
CA 1324065	A1	19931109	CA 1988-582644	19881109
US 5196312	A	19930323	US 1988-270676	19881114
PRIORITY APPL. INFO.:			JP 1987-286559	A 19871113

OTHER SOURCE(S): MARPAT 112:32646  
 GI



AB Aniline derivs. (I) (R1-R4 = H, halogen, alkyl, sulfone, OH; R5 = OH, NH2, alkyl-, sulfo alkyl-, hydroxyalkyl-, substituted NH2) can be conjugated to suitable substrates for enzyme assay. When I is liberated by the action of the enzyme they react with a chromogen in a reaction catalyzed by an oxidase to form a colored compound that can be determined spectrophotometrically.

γ-Glutamyl transpeptidase was assayed using γ-glutamyl-3,5-dibromo-4-hydroxyaniline as substrate with compound P-1 as the chromogen and bilirubin oxidases the oxidase. Incubations with 2.5-10 + 10-3 units of enzyme were run for 30 min and the change in optical d. at 630 nm followed. The rate of reaction was found to be proportional to the enzyme concentration and the assay was approx. 10-fold more sensitive than the conventional method.

IT 124232-79-7

RL: BIOL (Biological study)

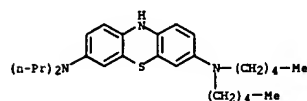
(in chromogenic enzyme assays using aniline derivs.)

RN 124232-79-7 CAPLUS

CN 1-Propanesulfonic acid, 3,3',3'',3'''-[[4,6-bis(bis(4-chlorophenyl)methyl)-10H-phenothiazine-3,7-diyl]dinitrilo]tetrakis- (9CI) (CA INDEX NAME)

L4 ANSWER 13 OF 19 CAPLUS COPYRIGHT 2005 ACS ON STN (Continued)

RL: USES (Uses)  
 (stabilizer, optical recording material contg. polymethine dye and)  
 RN 124773-95-1 CAPLUS  
 CN 10H-Phenothiazine-3,7-diamine, N,N-dipentyl-N',N'-dipropyl-, monohydrobromide (9CI) (CA INDEX NAME)



● HBr

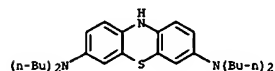
RN 124794-84-9 CAPLUS

CN 10H-Phenothiazine-3,7-diamine, N,N,N',N'-tetrabutyl-, monoperchlorate (9CI) (CA INDEX NAME)

CH 1

CRN 124794-83-9

CMF C28 H43 N3 S



CH 2

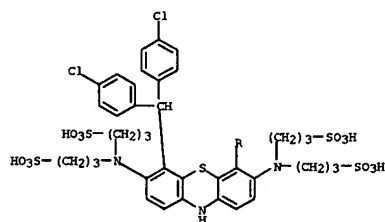
CRN 7601-90-3

CMF C1 H O4

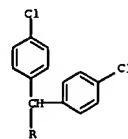


L4 ANSWER 14 OF 19 CAPLUS COPYRIGHT 2005 ACS ON STN (Continued)

PAGE 1-A



PAGE 2-A



L4 ANSWER 15 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1987:489349 CAPLUS  
 DOCUMENT NUMBER: 109:89349  
 TITLE: Urea derivatives, their preparation and use as chromogens in colorimetric determination of hydrogen peroxide and peroxidase in clinical analysis  
 INVENTOR(S): Sakata, Yoshitsugu; Hashidume, Kazunari; Iwata, Tsutomu; Mukai, Toyoharu; Kida, Masaaki  
 PATENT ASSIGNEE(S): Wako Pure Chemical Industries, Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 27 pp.  
 CODEN: EFXGKW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

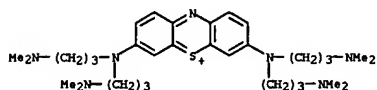
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 251297	A2	19880107	EP 1987-109413	19870630
EP 251297	A3	19881019		
EP 251297	B1	19910717		
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
JP 63246356	A2	19881013	JP 1987-144838	19870610
JP 07121901	B4	19951225		
US 4879383	A	19891107	US 1987-67050	19870629
AT 65246	E	19910815	AT 1987-109413	19870630
ES 2051713	T3	19940701	ES 1987-109413	19870630
US 5041636	A	19910820	US 1989-400911	19890830
PRIORITY APPL. INFO.:			JP 1986-155872	A 19860701
			US 1987-67050	A3 19870629
			EP 1987-109413	A 19870630

OTHER SOURCE(S): CASREACT 109:89349; MARPAT 109:89349  
 AB Urea derivs. R1R2CONHR3 (I; R1, R2 = N,N-disubstituted aminoaryl; aryl groups of R1 and R2 may be bonded via O or S; R3 = carboxyalkyl, alkoxyalkyl, alkylcarbonyl, arylsulfonyl, sulfoaryl, carboxyaryl), prepared by reaction of R1R2NH with an isocyanate RNCO (R8 = R3, alkoxyalkyl), are useful as chromogens in the determination of H2O2 or peroxidase, e.g. in clin. anal. Uric acid was determined in serum by adding 20  $\mu$ L serum to 3 mL of a reagent containing 0.05 mM I (R1 = R2 = 4-Me2NCGH4; R3 = CH2CO2Na), peroxidase (10 units/mL), uricase (2 units/mL), and ascorbate oxidase (2 units/mL), incubating at 37° for 5 min, and measuring the absorbance at 730 nm. The values obtained agreed closely with those obtained with a com. kit.  
 IT 115871-28-8  
 RL: ANST (Analytical study)  
 (as chromogen, for peroxidase and peroxide determination)  
 RN 115871-28-8 CAPLUS  
 CN Glycine, N-[[3,7-bis(dipropylamino)-10H-phenothiazin-10-yl]carbonyl]-, monosodium salt (9CI) (CA INDEX NAME)

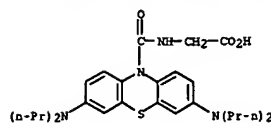
L4 ANSWER 16 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1982:458575 CAPLUS  
 DOCUMENT NUMBER: 97:58575  
 TITLE: Light-sensitive dyes  
 INVENTOR(S): Brokken-Zijp, Josephina C.; Van den Brink, Marinus J.; Hendriks, Petrus A. J. M.; Meurs, Jan H. H.  
 PATENT ASSIGNEE(S): Shell Internationale Research Maatschappij B. V., Neth.  
 SOURCE: Brit. UK Pat. Appl., 15 pp.  
 CODEN: BAXXDU  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 2083480	A	19820324	GB 1980-27812	19800828
PRIORITY APPL. INFO.:			GB 1980-27812	19800828
AB Light-sensitive heterocyclic compds. such as 3,7-bis(4-methyl-1-piperazinyl)phenothiazonium chloride [82438-44-6] and 3,7-bis(4-methyl-1-piperazinyl)phenoselenazonium chloride [82438-45-7] are useful in photoelectrochem. cells. Thus, several compds. of this type were prepared and their photogalvanic activities were determined				
IT 82447-31-2				
RL: USES (Uses)				
(photoelectrochem. cells containing, properties of)				
RN 82447-31-2 CAPLUS				
CN Phenothiazin-5-ium, 3,7-bis[bis[3-(dimethylamino)propyl]amino]-, chloride (9CI) (CA INDEX NAME)				

● Cl<sup>-</sup>

L4 ANSWER 15 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)



● Na

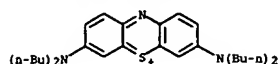
L4 ANSWER 17 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1978:520931 CAPLUS  
 DOCUMENT NUMBER: 89:120931  
 TITLE: Photosensitive color imaging materials  
 INVENTOR(S): Suzuki, Akira; Hanada, Makoto  
 PATENT ASSIGNEE(S): Ricoh Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKKXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 53009519	A2	19780128	JP 1976-83722	19760714
JP 60020740	B4	19850523		
PRIORITY APPL. INFO.:			JP 1976-83722	A 19760714
AB Photosensitive color imaging materials are prepared by randomly distributing on appropriate supports 3 basic color microcapsules each of which contains a photopolymerizable monomer, a free radical-forming agent, a sensitizer dye-type polymerization initiator, and a color coupler. Thus, glycerol triacrylate 8, N,N,N',N'-tetrabutylthionine (I) 0.1, Et acrylate-1-hydroxy-N-(p-vinylloxyethyl)-2-naphthamide copolymer (II) 2, a surfactant 0.2, and PhCH2OH 0.5 parts were dispersed in a poly(vinyl alc.) solution, the dispersion was diluted, and the pH of the dispersion was adjusted to 4-4.3 with HCl to give red-sensitive microcapsules which yielded a cyan color. Similarly, green-sensitive microcapsules (giving a magenta color) were prepared by using N,N,N',N'-tetramethyl-4'-dodecylsulfaniline and Me methacrylate-1-phenyl-3-methacrylamido-5-pyrazolone copolymer instead of I and II, resp., whereas blue-sensitive yellow color-forming microcapsules were prepared by using phenanthrenequinone and 2-ethylhexyl acrylate-2-methoxy-5-methacrylamido- $\alpha$ -benzoylacetanilide copolymer instead of I and II, resp. The 3 types of microcapsules were mixed and coated on a film support to give a color photoimaging film. The film was imagewise-exposed, a paper was pressed on the film to transfer the unexposed capsules to the paper, the paper was developed with a developer containing NaOH 5, a 5% Carbowax 4000 solution 10, Na2SO4 1, PhCH2OH 5, 4-amino-N-ethyl-N-(p-methanesulfonamidoethyl)-m-toluidine sesquisulfate monohydrate 10, and H2O 964 parts, and fixed with a 2% K2S2O8 solution to give a clean colored copy.				
IT 67389-41-7				
RL: USES (Uses)				
(red-sensitive photopolymerizable microcapsules containing, for multicolor photoimage formation)				
RN 67389-41-7 CAPLUS				
CN Phenothiazin-5-ium, 3,7-bis(dibutylamino)-, chloride (9CI) (CA INDEX NAME)				



L4 ANSWER 17 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)

● Cl<sup>-</sup>

L4 ANSWER 18 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1971:4709 CAPLUS  
 DOCUMENT NUMBER: 74:4709  
 TITLE: Nonmigratory photoreducible thiazine and phenazine dyes  
 PATENT ASSIGNEE(S): du Pont de Nemours, E. I., and Co.  
 SOURCE: Brit., 10 pp.  
 CODEN: BRXAAA  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 1193923		19700603		
DE 1769359			DE	
US 3579339		19710000	US	
			US	19670523

PRIORITY APPLN. INFO.:

GI For diagram(s), see printed CA Issue.

AB The title compds. (I and II) are nondiffusible in gelatin emulsions because they contain fatty tails. Thus, phenothiazine was brominated in AcOH and the perbromide (III) reacted with Bu2NH in EtOH to give I (R1 = R2 = R3 = R4 = Bu). Similarly 3 other I were prepared Decyl bromide and MeNHPh gave PhNMeC10H21 which was oxidatively coupled with Me2NCGH4NH2 and H2S to give I (R1 = C10H21, R2 = R3 = R4 = Me). Similarly 3 other unsym. I were prepared (4-Me2NCGH4)2NH was condensed with 4-Cl2H25CGH4NH2 using MnO2 in AcOH to give II (R1 = R2 = Me, R3 = C6H4C12H25-4). Similarly 5 other II were prepared III and 1,3-dipiperidylpropane gave polymer IV; a similar product was prepared from EtNH(CH2)6NHET. A 1:1 copolymer of CH2=CHCO2Me and glycidyl methacrylate was treated with Methylene Azure B (CI 52,010) in MeCOEt to give V. Similarly 4 other polymeric dyes were prepared Multilayer photopolymer color films prepared using the above dyes had better color separation and sharper detail than controls using migratory dyes.

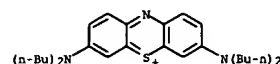
IT 30189-85-6P

RL: IMF (Industrial manufacture); PREP (Preparation)

(preparation of)

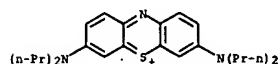
RN 30189-85-6 CAPLUS

CN Phenothiazin-5-ium, 3,7-bis(dibutylamino)-, bromide (8CI) (CA INDEX NAME)

● Br<sup>-</sup>

L4 ANSWER 19 OF 19 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1961:28332 CAPLUS  
 DOCUMENT NUMBER: 55:28332  
 ORIGINAL REFERENCE NO.: 55:5633e-g  
 TITLE: Chromatographic separation and isolation of metachromatic thiazine dyes  
 AUTHOR(S): Taylor, Kenneth B.  
 CORPORATE SOURCE: Univ. Bristol, UK  
 SOURCE: Journal of Histochemistry and Cytochemistry (1960), 8, 248-57  
 CODEN: JHCYAS; ISSN: 0022-1554  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Unavailable  
 AB Methods were given for the chromatographic separation of 22 N-alkylthionines together with Rf equivs. and absorption maximum Alkyl groups were Me, Et, Pr, or combinations thereof. Com. preps. of the Azure dyes A, B, and C were each separated into methylene blue, tri-, di-, and monomethylthionine fractions. Wright's and Leishman's stains were separated into the above fractions plus methylene violet.  
 IT 119150-13-9, 3H-Phenothiazine, 7-dipropylamino-3-propylimino-, propochloride  
 (separation of)  
 RN 119150-13-9 CAPLUS  
 CN 3H-Phenothiazine, 7-dipropylamino-3-propylimino-, propochloride (6CI) (CA INDEX NAME)

● Cl<sup>-</sup>